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Continuous quantification of aerial emissions from animal feeding operations over an extended time period is labor and resource intensive. Strategically reducing measurement time to achieve comparable emission results is thus highly desirable. This article delineates the effects of measurement intervals on estimation of annual mean and maximum daily ammonia emission rate (ER) of high-rise (HR) and manure-belt (MB) layer houses. The full dataset consisted of 318 daily ER values of four HR houses from weekly 48 h continuous measurement and 112 daily ER values of two MB houses from bi-weekly 48 h continuous measurements over one-year period. Each full dataset was sampled to yield subsets of daily ER at different intervals, i.e., one week (HR houses only), two weeks, one month, two months, or three months. The corresponding estimates of annual ammonia ER from the subsets were computed and compared with that of the full dataset. The results indicate that the annual mean daily ER values derived from the subsets progressively deviated from that of the full dataset by 3% to 37% for the HR houses and by 6% to 41% for the MB houses. The augmented measurement intervals (i.e., greater than bi-weekly for the HR houses and greater than monthly for the MB houses) led to considerable underestimation of the daily maximum ER values, and thus are not recommended when daily maximum emission values are to be assessed.